

Themen

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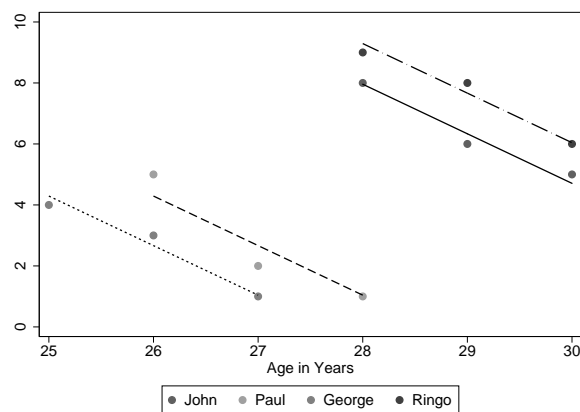
Individual Dummy Variable Regression

$$y_{it} = u_{0i} + b_1x_{1it} + \dots + b_kx_{kit} + \epsilon_{it} \quad (1)$$

```
. use http://www.stata-press.com/data/kk/beatles, clear
. tab persnr, gen(d)
. reg lsat age d2 d3 d4
```

Eine „didaktische Graphik“

```
. predict yh
. twoway ///
> || sc lsat yh age if persnr==1, mstyle(p1) lstyle(. p1) ms(O i) c(. l) ///
> || sc lsat yh age if persnr==2, mstyle(p2) lstyle(. p2) ms(O i) c(. l) ///
> || sc lsat yh age if persnr==3, mstyle(p3) lstyle(. p3) ms(O i) c(. l) ///
> || sc lsat yh age if persnr==4, mstyle(p4) lstyle(. p4) ms(O i) c(. l) ///
> || , legend(order(1 "John" 3 "Paul" 5 "George" 7 "Ringo") rows(1))
```



1.2 Einige Kennziffern

Einige Kennziffern

- Varianz von u_{0i}

```
. local mean = (0 + _b[d2] + _b[d3] + _b[d4])/4
. local VARa = ((0-'mean')^2 + (_b[d2] - 'mean')^2 + (_b[d3] - 'mean')^2 + (_
> b[d4] - 'mean')^2)/3
. di `VARa'
```

- Varianz von ϵ_{it} ($MSE = \frac{RSS}{n-K}$)

```
. predict resid, resid
. sum lsat
. gen x = (resid - r(mean))^2
. gen y = sum(x)
. local VARb = y[_N]/(12-5)
. di `Varb'
```

- Intraclass-Korrelation:

```
. di `VARa' / (`VARa' + `VARb')
```

1.3 Modellfit

Modellfit

- Standard r^2

```
. corr lsat yh
. di r(rho)^2
```

- Between $r^2 = \text{corr}(\bar{\mathbf{x}}_i \hat{\beta}, \bar{y}_i)^2$

```
. egen mlsat=mean(lsat), by(persnr)
. egen mage=mean(age), by(persnr)
. gen yh_between = _b[_cons] + _b[age]*mage
. corr mlsat yh_between
. di r(rho)^2
```

- Within $r^2 = \text{corr}\left((\mathbf{x}_{it} - \bar{\mathbf{x}}_i) \hat{\beta}, y_{it} - \bar{y}_i\right)^2$

```
. gen lsat_demeaned = lsat - mlsat
. gen yh_within = _b[_cons] + _b[age]*(age-mage)
. corr lsat_demeaned yh_within
. di r(rho)^2
```

- Overall $r^2 = \text{corr}\left(\mathbf{x}_{it} \hat{\beta}, y_{it}\right)^2$

```
. gen yh_overall = _b[_cons] + _b[age]*age
. corr lsat yh_overall
. di r(rho)^2
```

1.4 Within-Regression

Within-Regression

$$y_{it} = u_{0i} + b_1 x_{1it} + \dots + b_k x_{kit} + \epsilon_{it} \quad (2)$$

kann zu

$$y_{it} - \bar{y}_i = (x_{1it} - \bar{x}_{1i})b_1 + \dots + (x_{kit} - \bar{x}_{ki})b_k + \epsilon_{it} \quad (3)$$

umgeformt werden.

Datenanalyseprogramme nutzen letztere Spezifikation zur Berechnung des individual dummy variable regression models.

```
. xtreg lsat age, i(persnr) fe
```

Literatur